Nashua River Watershed Investigations for Grades K-8

Lesson # 5-3

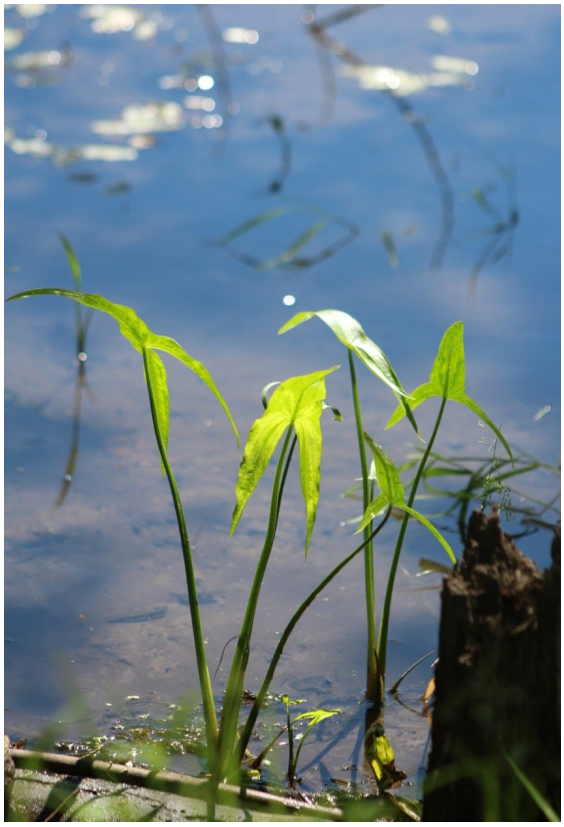
Title: Food Webs & the Aquatic Ecosystem

Grade level & Standard: Grade 5
5-ELS2-1 Develop food web model to describe movement of matter among producers, primary and secondary consumers, decomposers, air and soil in the environment.

Objective: The class of students will work together to create a large aquatic food web mural based on Nashua River organisms including decomposers, producers, primary & secondary consumers, and scavengers. Students will make connections between various organisms and demonstrate how nutrients (matter) travel between trophic levels. Students will be assigned one organism, complete research on their organisms to present to class, and draw their organism for addition to the food web mural.

Chicken of the Woods fungus
Photo taken by Kimberly King

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.



Arrow Arum plant is a favored food of the muskrat
Photo taken by Kimberly King

Materials:

- 25 cards 4x6 inch size
- drawing pencils/colored pencils
- yarn or string
- staples or tape or push pins
- 6 blank flip chart sheets or large poster boards
- markers
- list of organisms from the river and riparian environment

Procedure:

1. Break students into six groups.
2. Students are assigned an organism to research from Trophic Levels of Macro-Invertebrates Sheet (option #1) or select an organism from the food web cards (option #2).

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

3. Using reference materials and computers, students fill out the Nashua River Food Web datasheet to determine web connections.
4. Students work together to create a profile view of the river on mural paper including river features found above, on surface, and below including: deep water, shallow water, gravel, riffles and pools, river bank, upland, above water and below water.
5. Hang the mural on a wall or lay out on a large flat surface.

Option #1 (45 - 60 minutes)
Looking at photos from their research, students draw and color their organisms on 4x6 card and record the following on card back side:

1. Name of Organism/habitat (specific location)
2. Label your organism with one of the following - producer / consumer (primary, secondary, tertiary), decomposer, scavenger
3. How does your organism get nutrients for energy?
4. What organism might receive nutrients from your organism?

Option #2 (30 - 45 minutes)
Students use Nashua River Watershed Food Web cards (attached) and answer the following:

1. How does your organism get nutrients for energy?
2. What organism might receive nutrients from your organism?

Class discusses connections and each student introduces their organism, places it on the mural, and makes one connection using string or yarn to another organism in the food web. More than one connection will arise as students discuss their research findings.

Data Sheets: (attached)
- Trophic Levels of Aquatic Macro-Invertebrates
- Nashua River Organisms cards (2 pages)
- Life in a Pond food web cards by *T. Trimp 2006 http://sciencespot.net/*

Extension:
- ScienceSpot Life in a Pond Food Web Lesson - http://sciencespot.net/

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

Trophic Levels of Aquatic Macro-Invertebrates NRWI Lesson 5-3

PRODUCERS (make sunlight into food)	**HERBIVORES** (eat living plants) (primary consumers)	**CARNIVORES** (eat living animal matter) (secondary consumers)	**OMNIVORES** (eat living plant & animal matter)	**DETRITIVORES** (eat dead & decaying matter) (scavengers)
Algae **Yellow Water lily** *Nymphaea odorata* **Coontail or Hornwort** *Ceratophyllum* **Duckweed** *Lemna* **Cat tail** *Typha*	**Beetles** *Coleoptera* **True Flies** Midges Mosquitoes Crane flies *Diptera* **Snails** *Gastropoda*	**Beetles** *Coleoptera* **True Flies** Midges Mosquitoes Crane flies *Diptera* **Dragonflies and Damselfies** *Odonata* **Stone Flies** *Plecoptera* **Caddisflies** *Trichoptera* **True Bugs** Water Scorpions Water Striders Giant Water Bugs *Hemiptera* **Bladderwort** *Utricuaria*	**Beetles** *Coleoptera* **True Flies** Midges Mosquitoes Crane flies *Diptera* **Mayflies** *Ephemeroptera* **Caddisflies** *Trichoptera* **Crayfish** *Decapoda* **Mussels and Clams** *Pelecypoda*	**Stone Flies** *Plecoptera* **Mayflies** *Ephemeroptera* **Caddisflies** *Trichoptera* **True Bugs** Water Scorpions Water Striders Giant Water Bugs *Hemiptera* **Sowbugs** *Isopoda* **Scuds** *Amphipoda* **Crayfish** *Decapoda* **Mussels and Clams** *Pelecypoda*

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.